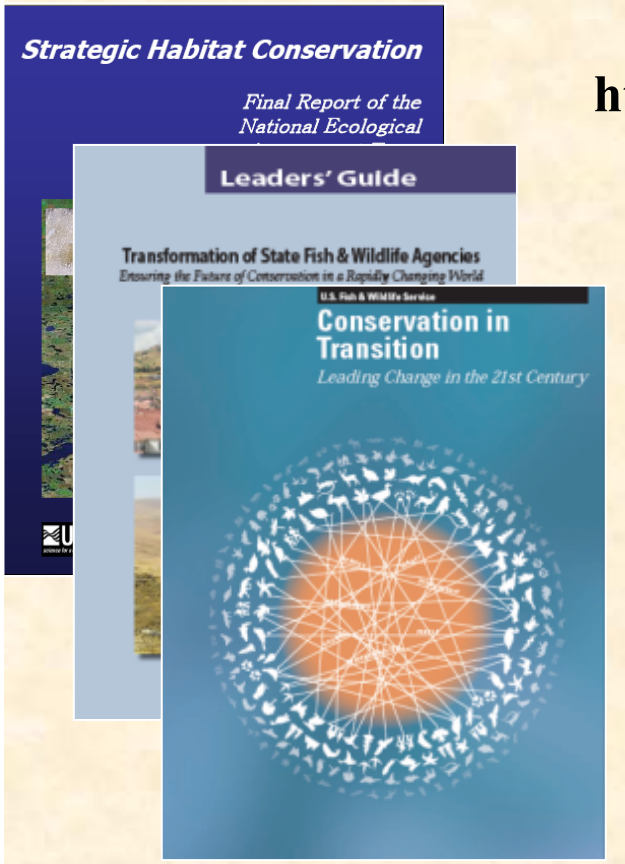
Conservation In Transition:
Adapting To Meet The Growing Challenges In Sustaining Fish & Wildlife



http://www.fws.gov/landscape-conservation/shc.html

Surrogate Species Training
Moving Forward With Landscape-scale Conservation
San Juan, PR October 2012

Conservation In Transition:
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Objectives:

- A Closer Look At The "Whys" – How *We* Got Here
- A Vision: Defining The Conservation Landscape of The Future
  - SECAS: SHC, LCCs, The Role of "Surrogate Species"
- Building On A Solid State

Conservation In Transition:
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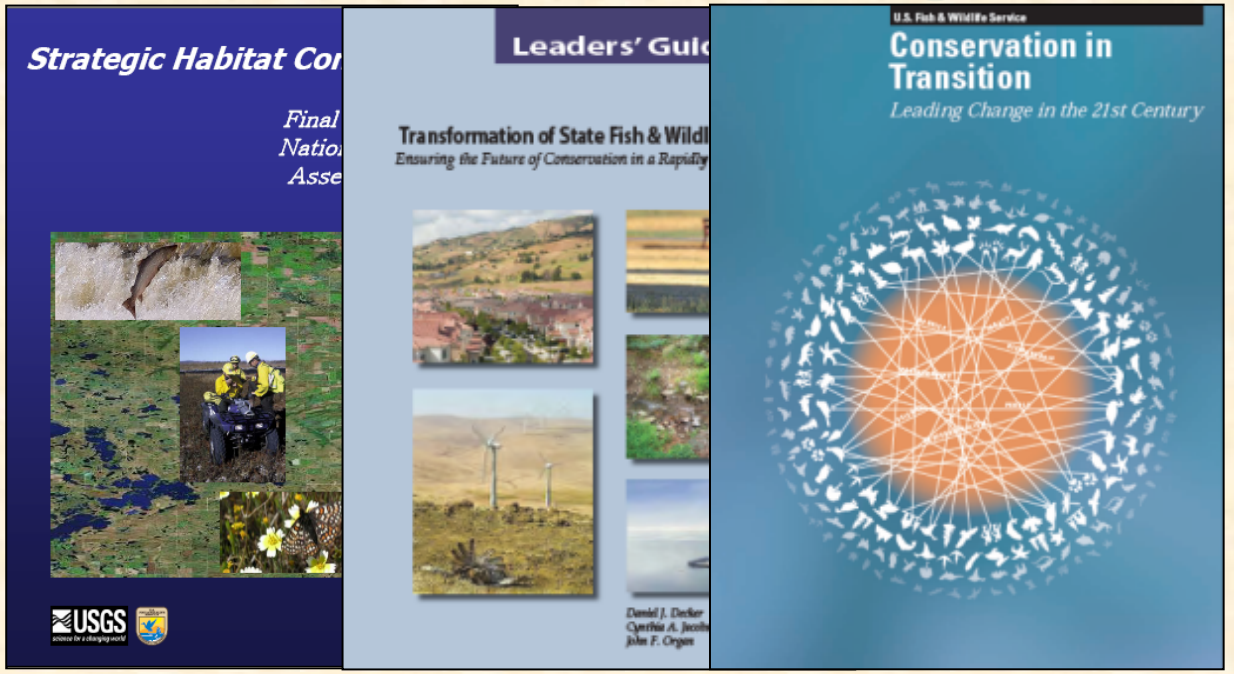
"The world we're in today is undergoing as rapid a change as any in the history of mankind. Everything necessary to support the world's population is changing at incredible rates causing increased pressure on the planet, environment, society and individuals in general," Admiral Samuel J. Locklear, Commander Allied Joint Force Command, Naples. 2011

U.S. Fish & Wildlife Service
Conserving the Nature of America

SHC

Keeping Pace With Perpetual Change



Are Not The F&W Agencies of Yesterday

Fish & Wildlife Agencies Of Today…

Nor Will They Be The F&W Agencies of Tomorrow

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Conserving the Nature of America

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Keeping Pace With Perpetual Change

An Operational Comparison of the Changing Nature of Conservation

	Resource Conservation (Manage Resources)	Conservation Science (System Sustainability)
Planning	• Activity oriented • Administratively focused • Programmatically explicit • Opportunity based	• Outcome oriented • Model based • Spatially explicit • Multi-scaled • Predictive
Implementation	• Protection, restoration, and management pursued as ends • Opportunities prioritized at the project scale	• Protection, restoration, and management pursued as means • Opportunities prioritized against landscape scale assessments
Monitoring & Evaluation	• An operational luxury • Appropriate as an element of research	• Essential to assessing outcomes • Integral to structured, adaptive decision making
Research	• Priorities are derived from periodic calls to programs and field stations to identify their needs	• Aimed at testing assumptions and uncertainties of biological planning and assessment

Drivers of Change

- Advances In Science & Technology
- Scope & Scale of “System” Changes + Runaway Complexity
- Fiscal and Social Accountability

Drivers of Change

- ✓ Advancements in Conservation Theory
  - ✓ Conservation Biology
  - ✓ Landscape Ecology
  - ✓ Ecosystem Management
- ✓ Advancements in Decision Theory
  - ✓ Adaptive Management
  - ✓ Structured Decision-making
  - ✓ Bayesian Belief Networks
- Advancements in Geospatial & IM Technology
  - ✓ Geographic Information Systems
  - ✓ Remote Sensing
  - ✓ Information Management
  - ✓ Internet-based Collaboration

Drivers of Change

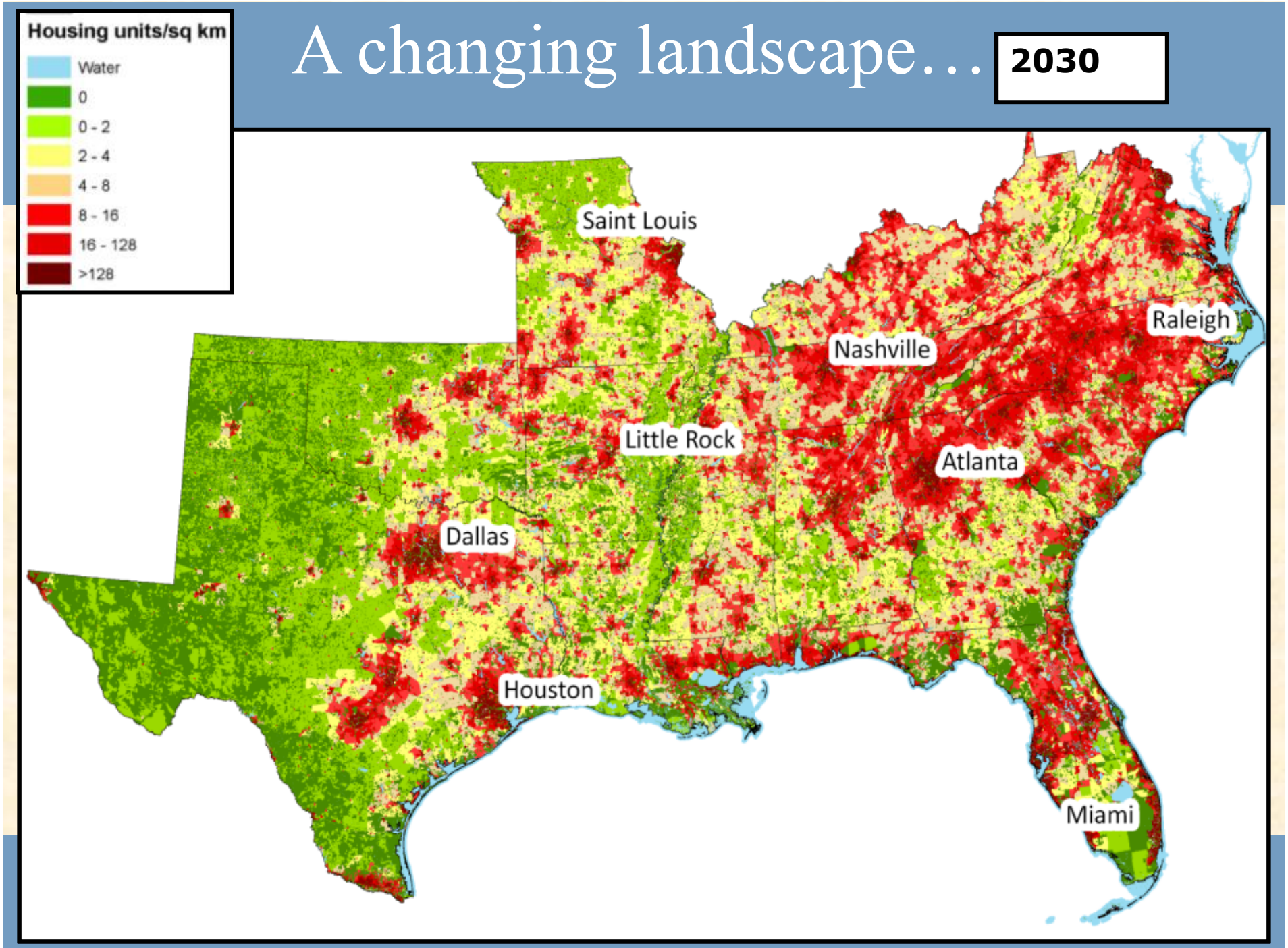
Surrogate Species: “species that are used to represent other species or aspects of the environment”. (Caro 2010)

- ✓ Landscape Ecology
- ✓ Structured Decision-making

Population Objective: A measurable expression of a desired biological outcome...sustainability.

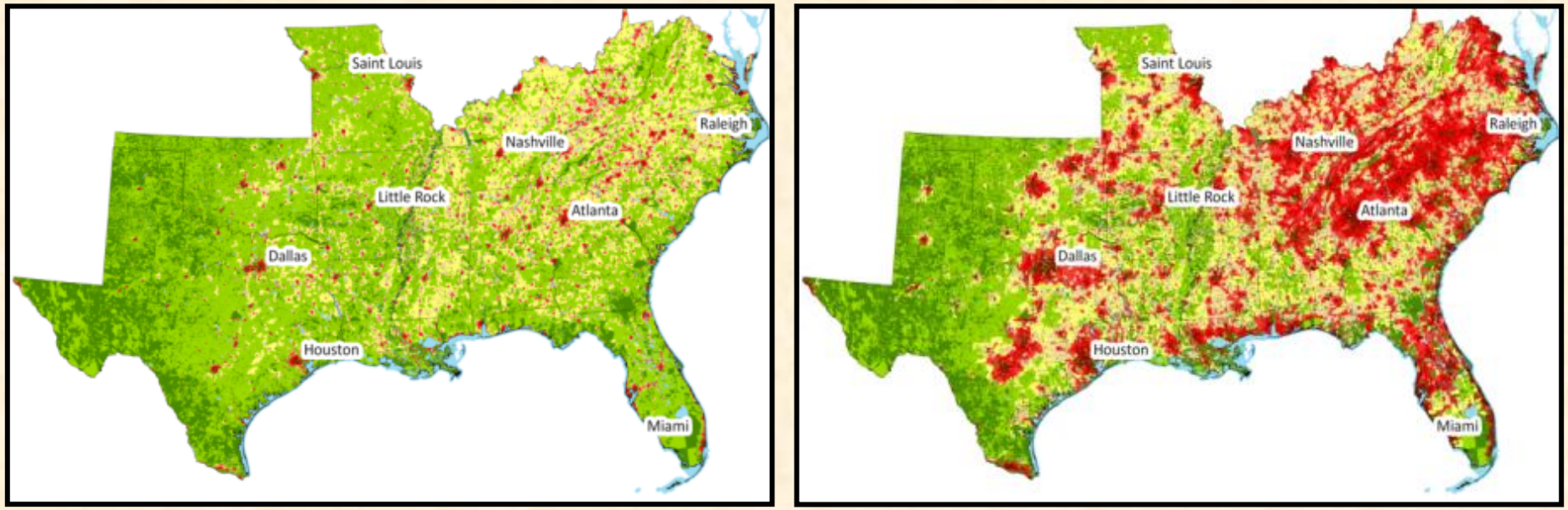
Functional Landscapes: Lands and waters with the properties and elements required to support desirable populations of fish and wildlife, while also providing human society with desired goods an services, including food, fiber, water, energy, and living space.

A changing landscape…



Landscape Changers Impacting The Future Of Fish & Wildlife Conservation

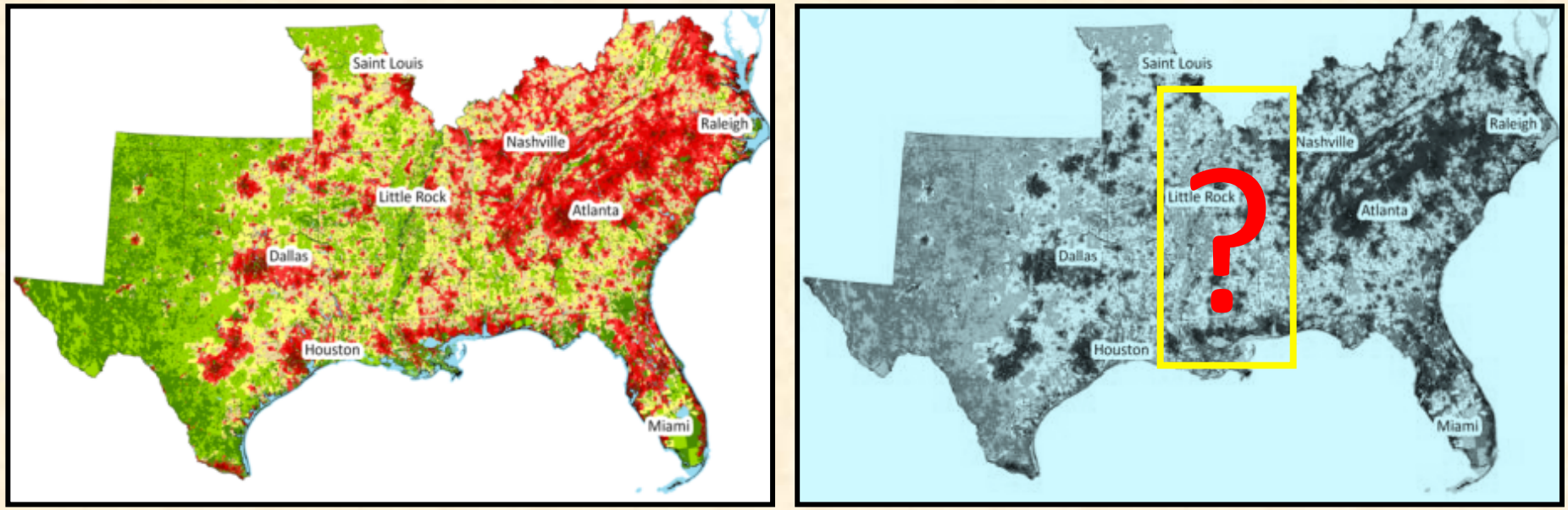
If I knew then what I know now??



Urban Growth: 1940 - 2030

Landscape Changers Impacting The Future Of Fish & Wildlife Conservation

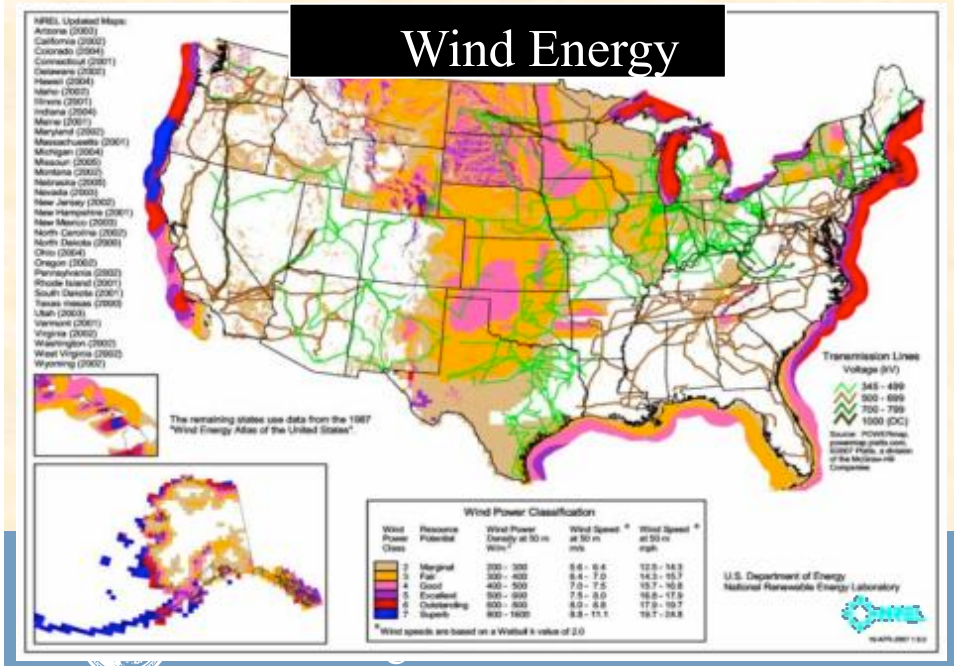
What tools are available or can be developed to “see” tomorrow?



Urban Growth: 1930 – 20xx

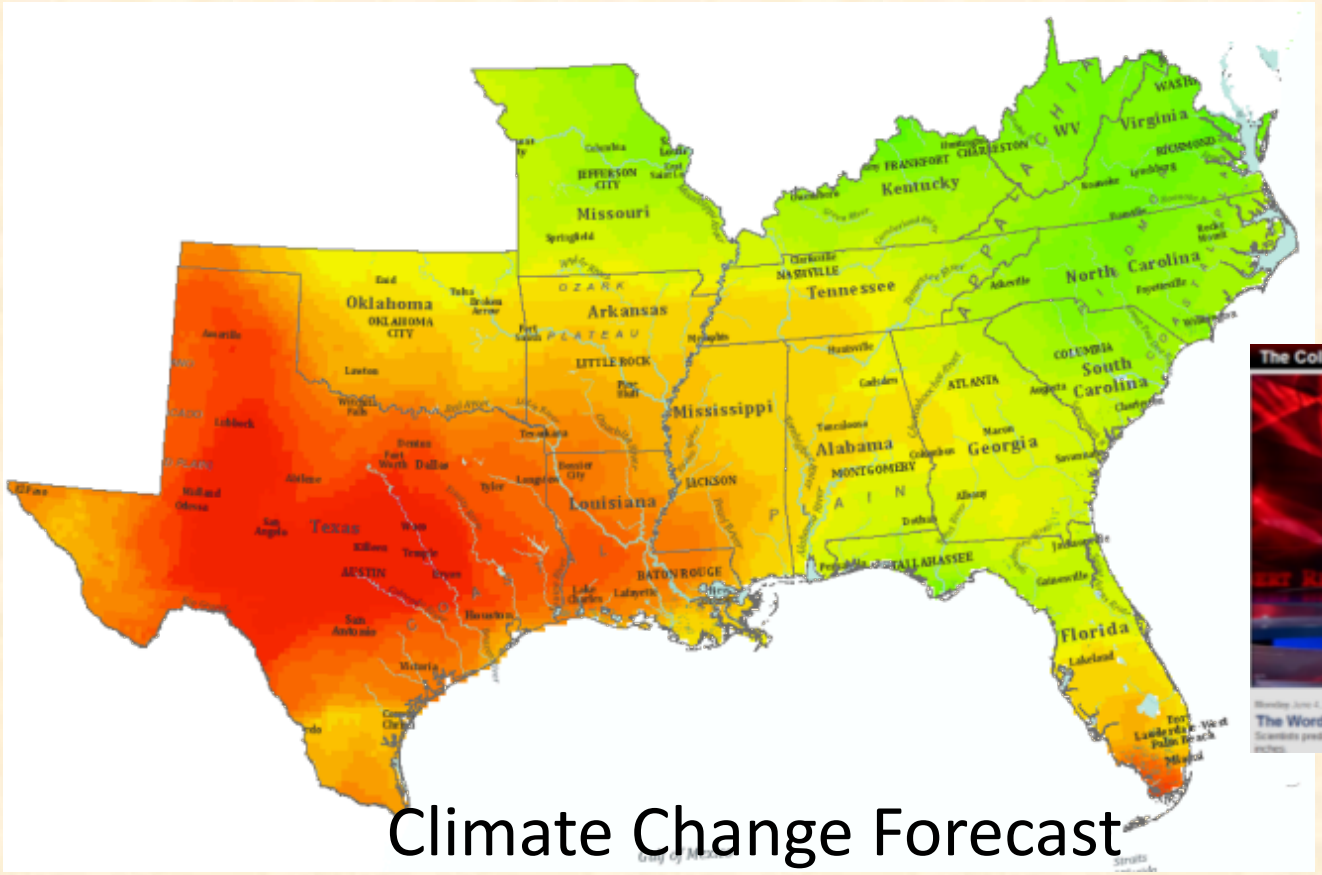
Global Energy Consumption and Dynamics

"I challenge you to join me in setting a new goal: By 2035, 80 percent of America's electricity will come from clean energy sources.



Some folks want wind and solar. Others want nuclear, clean coal and natural gas. To meet this goal, we will need them all — and I urge Democrats and Republicans to work together to make it happen."

Changing Climate



Climate Change Forecast

"Sink or Swim"

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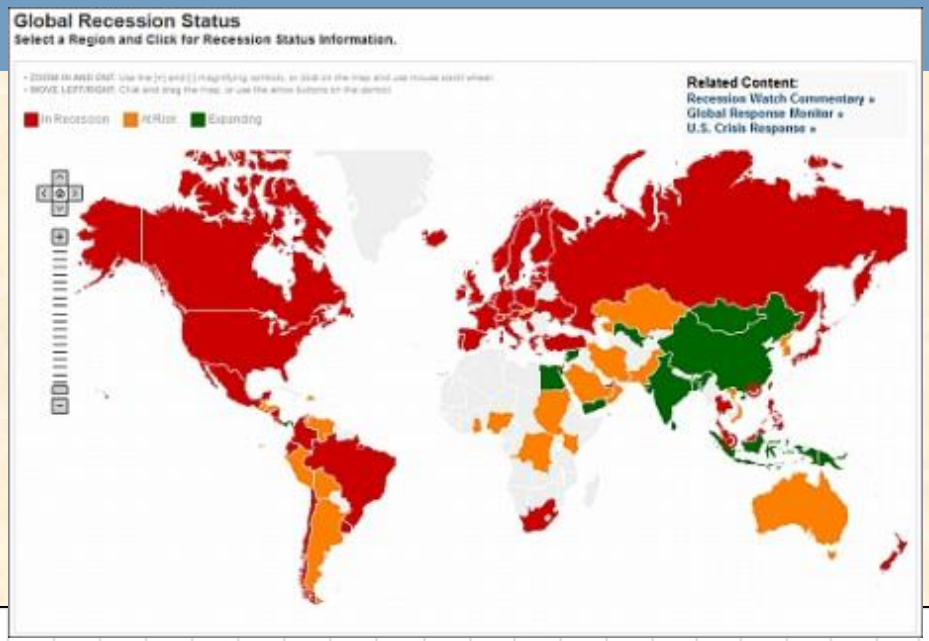
Societal Changes = Changing Values

Economy & Fiscal Accountability

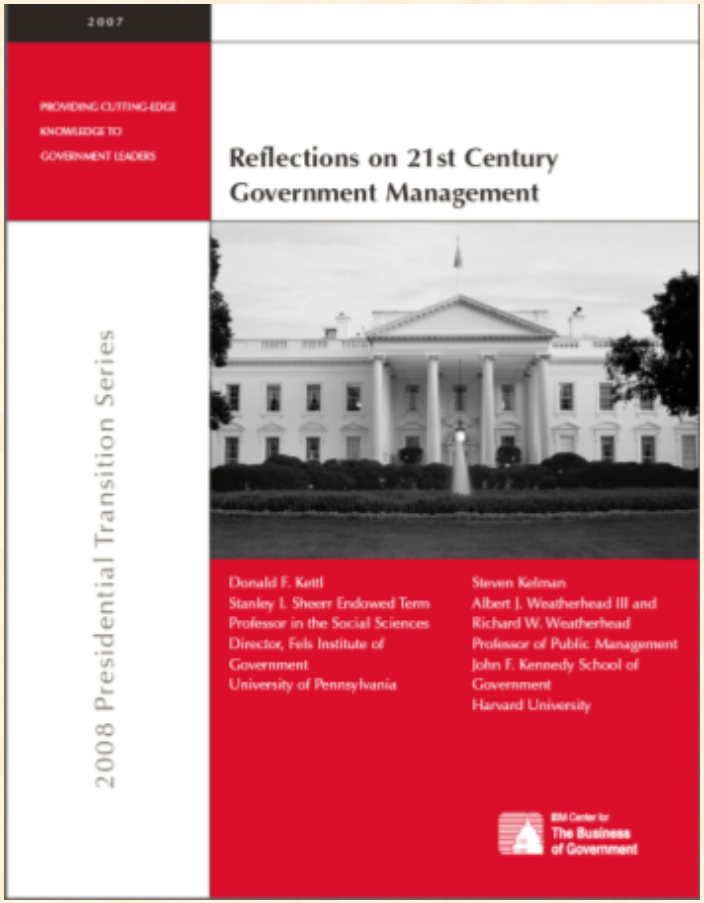


Economy & Fiscal Accountability

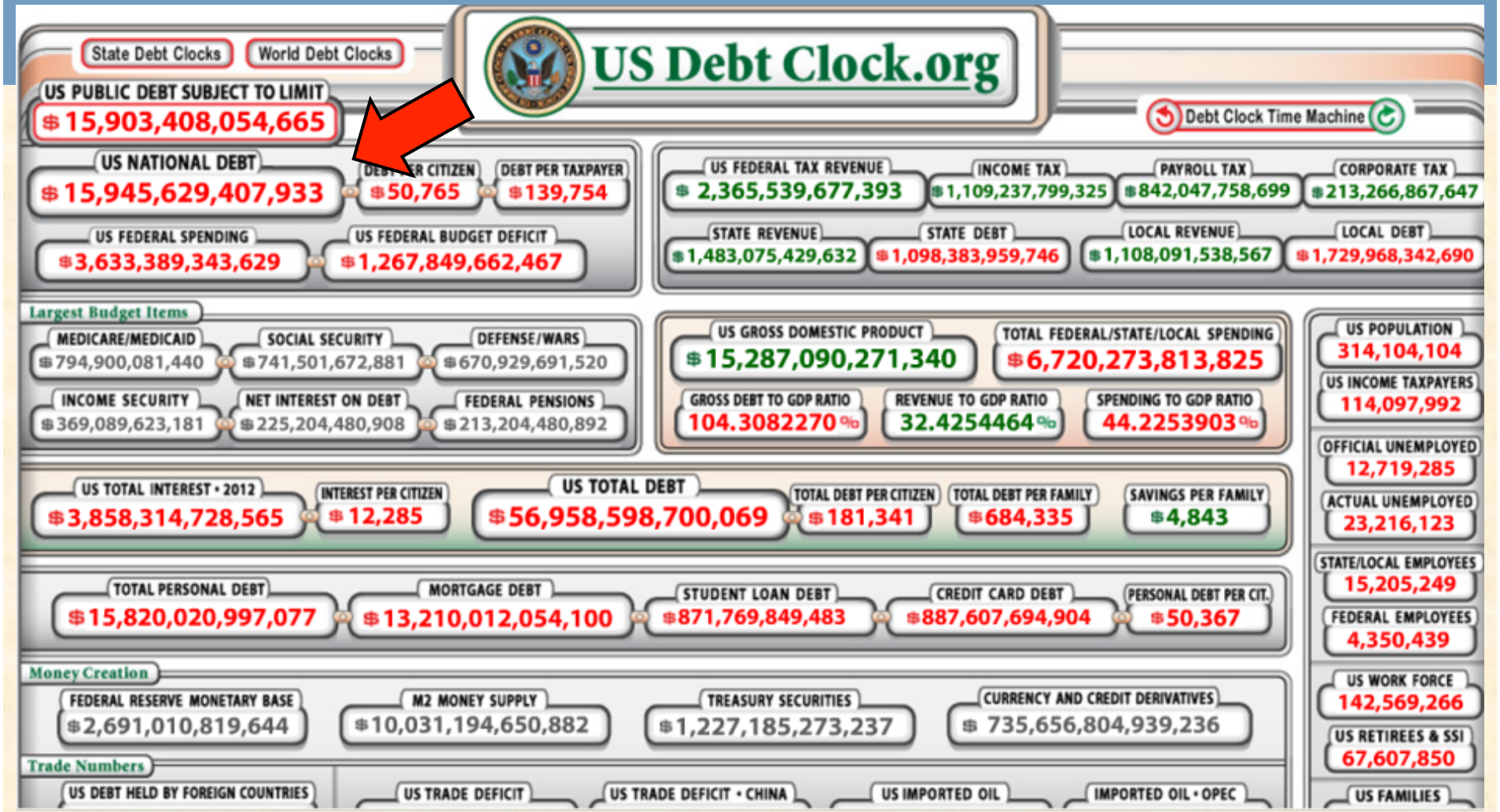
"The current conduct of American government is a poor match for the problems it must solve…"

"American governments increasingly face problems that pay little attention to the boundaries created to manage them…"

"If government is to serve the needs of its citizens in the 21st century, it must reconfigure itself – to shift the boundaries of who does what and, even more important, how its work gets done."



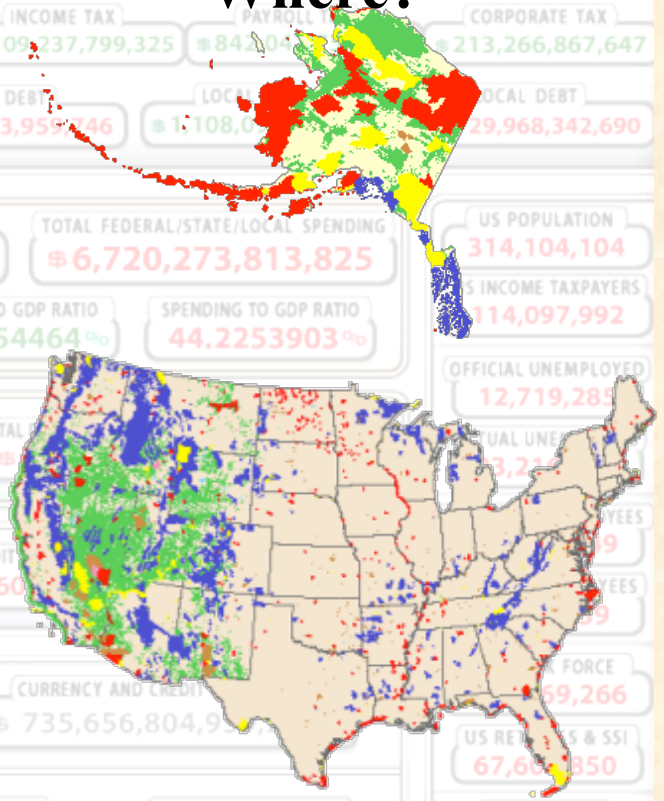
Economy & Fiscal Accountability



Economy & Fiscal Accountability

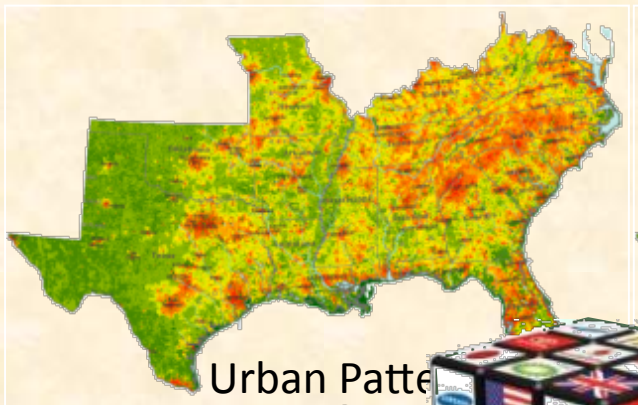
How Much Is Needed?
How Much More?
Where?

Bureau of Indian Affairs	55,700,000
Bureau of Land Management	269,699,049
Bureau of Reclamation	2,738,440
Department of Defense	27,551,073
US Forest Service	233,718,572
US Fish and Wildlife Service	105,648,322
National Parks Service	82,543,539
Tennessee Valley Authority	813,166
Others (e.g., NASA, DOE)	2,506,664
Natural Resource Conservation Service	34,199,979
Farm Services Agency	33,371,379

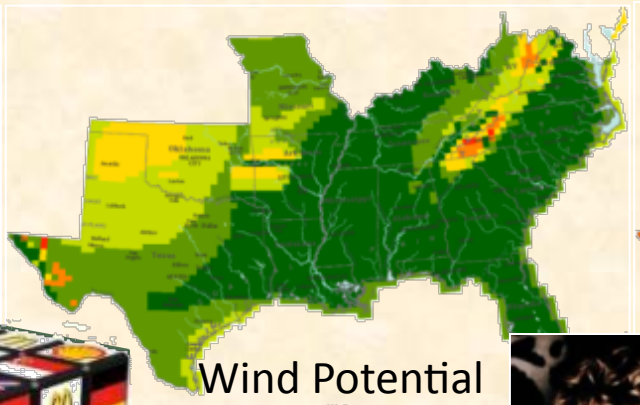


848,490,183

Scope and Scale of "System" Changes + Runaway Complexity

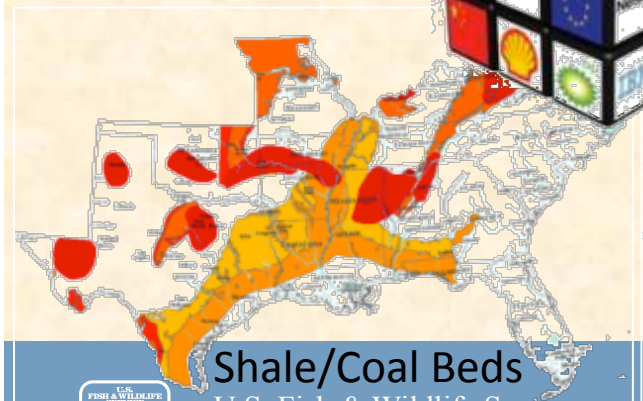


Urban Patte

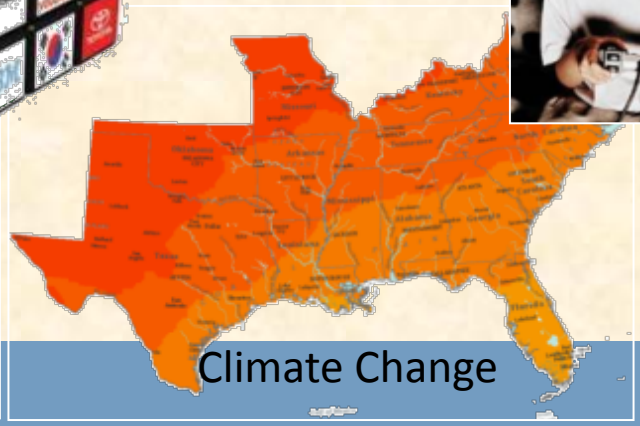


Wind Potential

lar Potential



Shale/Coal Beds



Climate Change

Water Stress

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Scope and Scale of "System" Changes + Runaway Complexity

21st Century conservation issues…

- **Inter-disciplinary in nature**
- **Multi-scaled in scope**
- **Span the jurisdictions of multiple agencies and organizations**
- **Intertwined with issues of socio-economic sustainability**

Shale/Coal Beds

Climate Change

Water Stress

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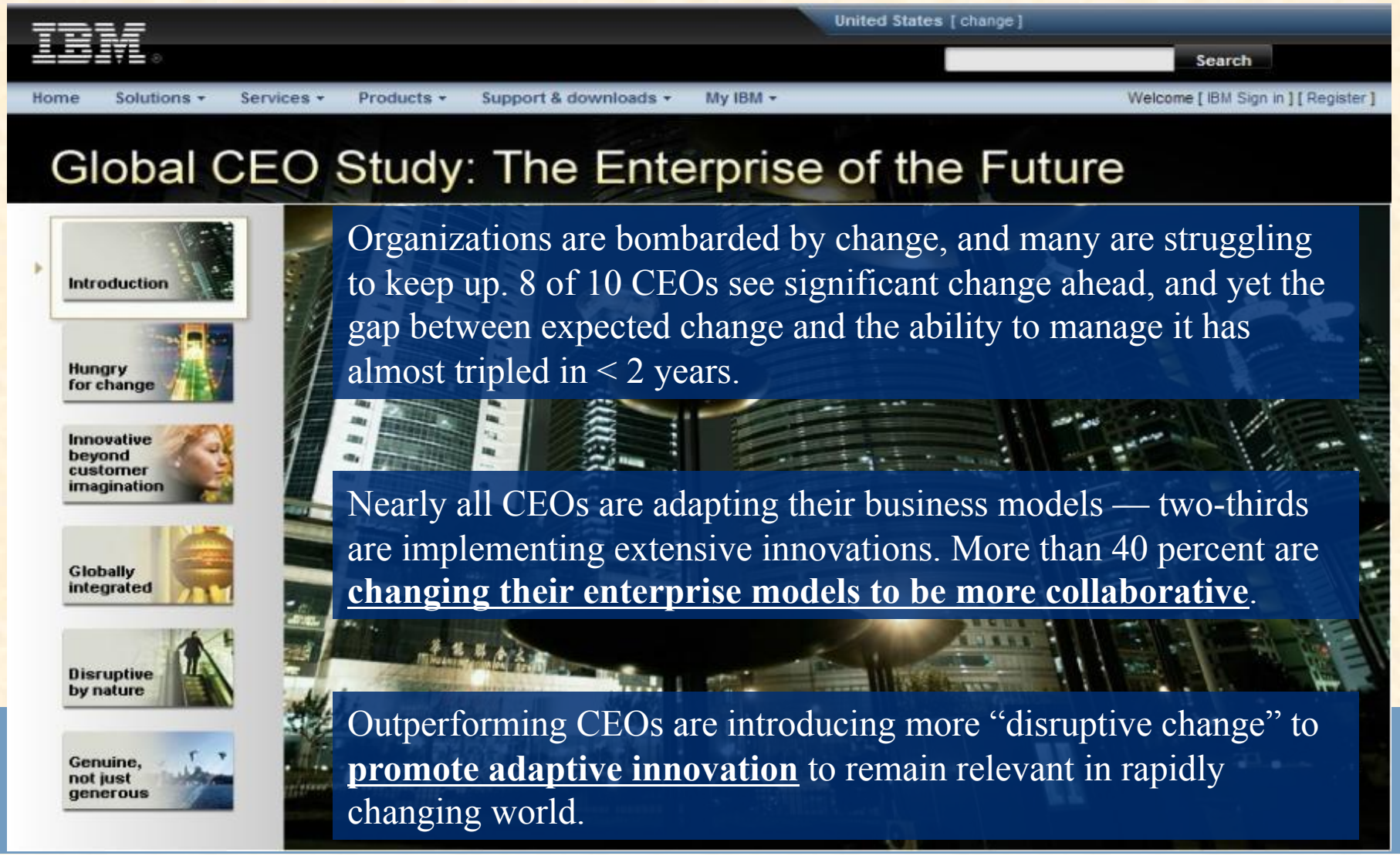

Keeping Pace With Perpetual Change

The Resource Conservation Era (circa 1890 – Present)

Exemplified by public policies originating in the Roosevelt/Pinchot era.
Man/nature relationship seen in a utilitarian, wise use context.

- Conservation Ethic – Resource development as an economic imperative, stewardship as a public responsibility
- Natural resources were segmented and compartmentalized, i.e. forest, soil, water, wildlife, range, etc.
- Practitioners (both scientists and managers) trained in resource-specific disciplines, e.g. forestry, wildlife, range management, soil science.
- The Nation's private, state, federal conservation infrastructure developed following this compartmentalized approach.

Keeping Pace With Perpetual Change

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  - ?? SECAS: SHC, LCCs, The Role of "Surrogate Species"
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Scope and Scale of "System" Changes + Runaway Complexity

The first step toward creating an improved future is developing the ability to envision it. VISION will ignite the fire of passion that fuels our commitment to do WHATEVER IT TAKES to achieve excellence. Only VISION allows us to transform dreams of greatness into the reality of achievement through human action. VISION has no boundaries and knows no limits. Our VISION is what we become in life." ~Tony Dungy

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Conserving the Nature of America

SHC

Scope and Scale of "System" Changes + Runaway Complexity

"Vision controls our perception and our perception becomes our reality"

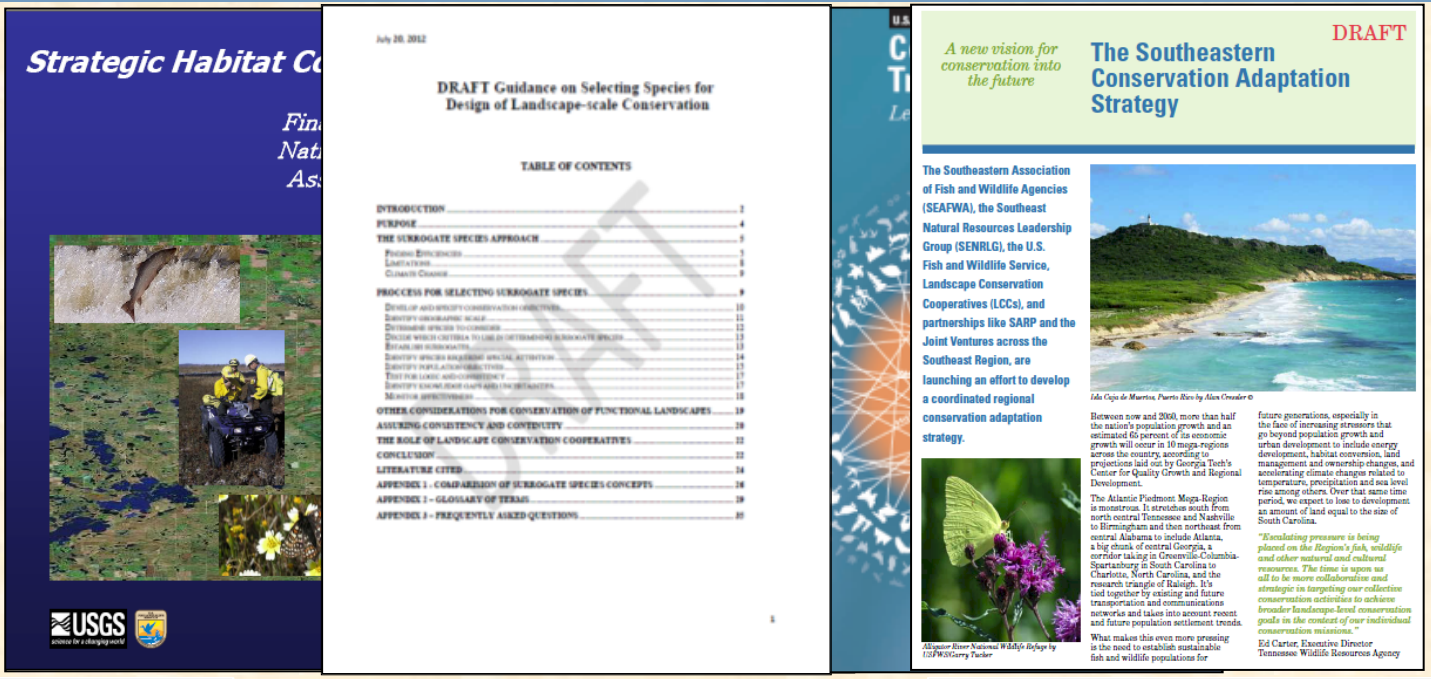
<u>The right vision</u> – keeps us open to possibilities, it gives us energy, and it makes us more accepting of change.

Dewitt Jones

U.S. Fish & Wildlife Service
Conserving the Nature of America

SHC

Keeping Pace With Perpetual Change



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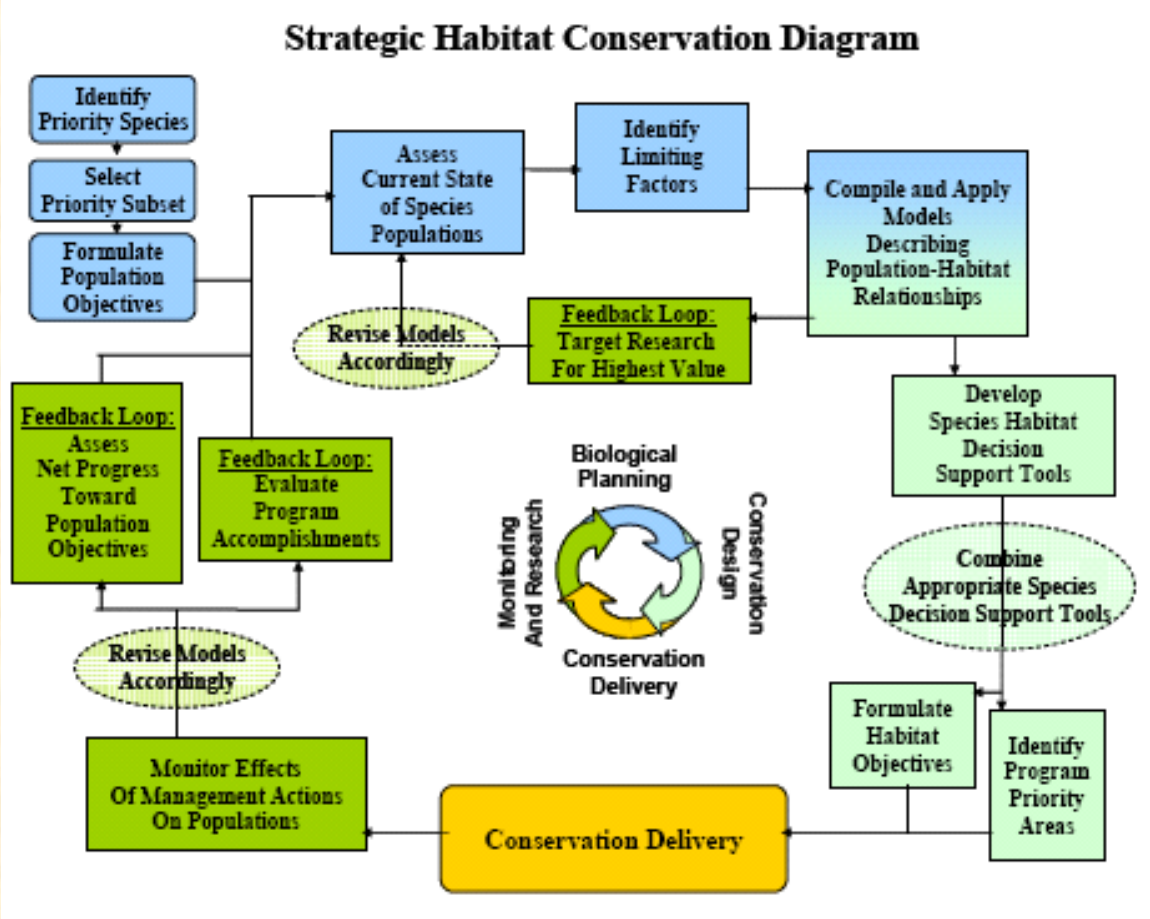
Foundation Concepts of SHC

- **Science:** As a body of knowledge and as a method of discovery:
  - Learning Becomes an explicit objective of management.



Conservation In Transition:
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"We must put our work in the context of landscape sustainability…

It makes us Think Bigger, It makes us Better.

We must know why we do what we do.

We must be nibble, able to adapt to remain relevant.

Dan Ashe, Director
US Fish & Wildlife Service
2012

Foundation Concepts of SHC

- **Conservation Target:** Landscapes that can sustain populations of fish and wildlife resources.
  - How Much, How Much More, and Where?

- **Science:** As a body of knowledge and as a method of discovery:
  - Learning Becomes an explicit objective of management.

- **Landscape:** Land management occurs at the site scale; yet ecological outcomes are system dependent, operating on processes manifested at broader spatial and temporal scales.
  - Addressing the Challenges of Scale
- **Interdependence:** Goals and objectives of functional landscapes to sustain fish and wildlife exceed the operational reach of individual programs, agencies, and organizations
  - Collaboration++

Conservation In Transition:
Adapting To Meet The Growing Challenges In Sustaining Fish & Wildlife

FWS Mission: Working with others to conserve, protect and enhance fish, wildlife, and plants and their habitats for the continuing benefit of the American people.

Conservation Objective: Characterize and maintain functional landscapes capable of supporting self-sustaining fish, wildlife, and plant populations.

Functioning Landscapes: lands and waters with the properties and elements required to support desirable populations of fish and wildlife, while also providing human society with desired goods and services, including food, fiber, water, energy, and living space.

Dan Ashe, Director
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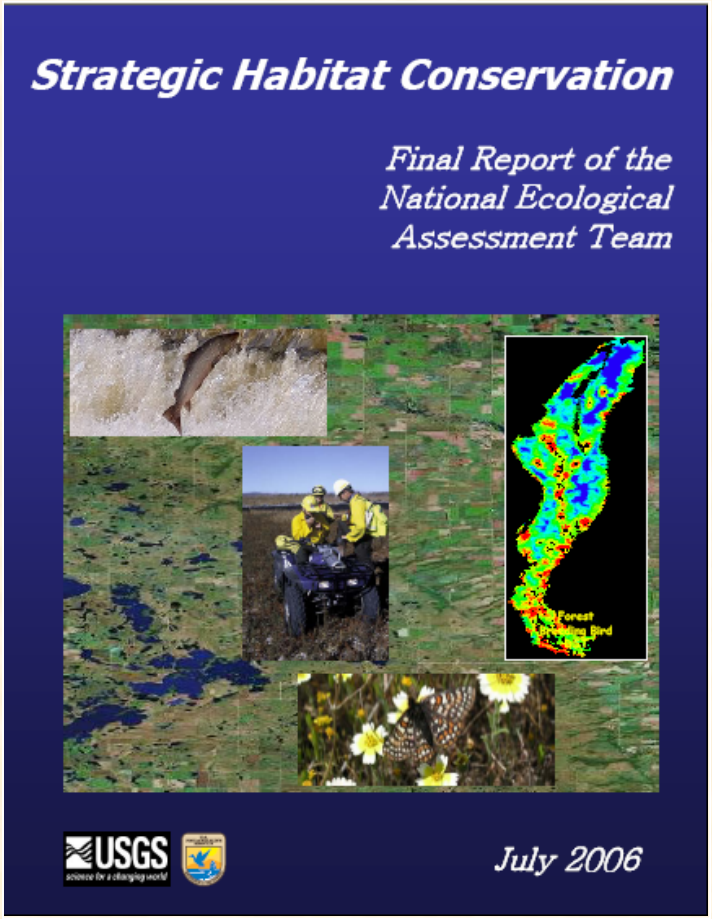

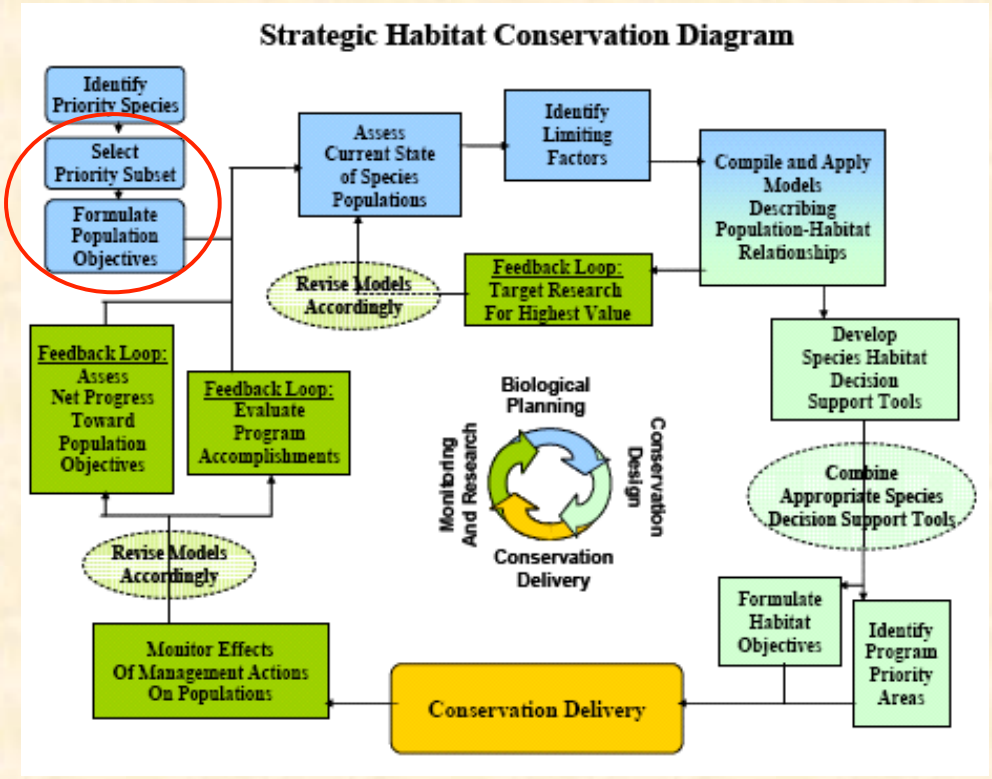

U.S. Fish & Wildlife Service
Conserving the Nature of America

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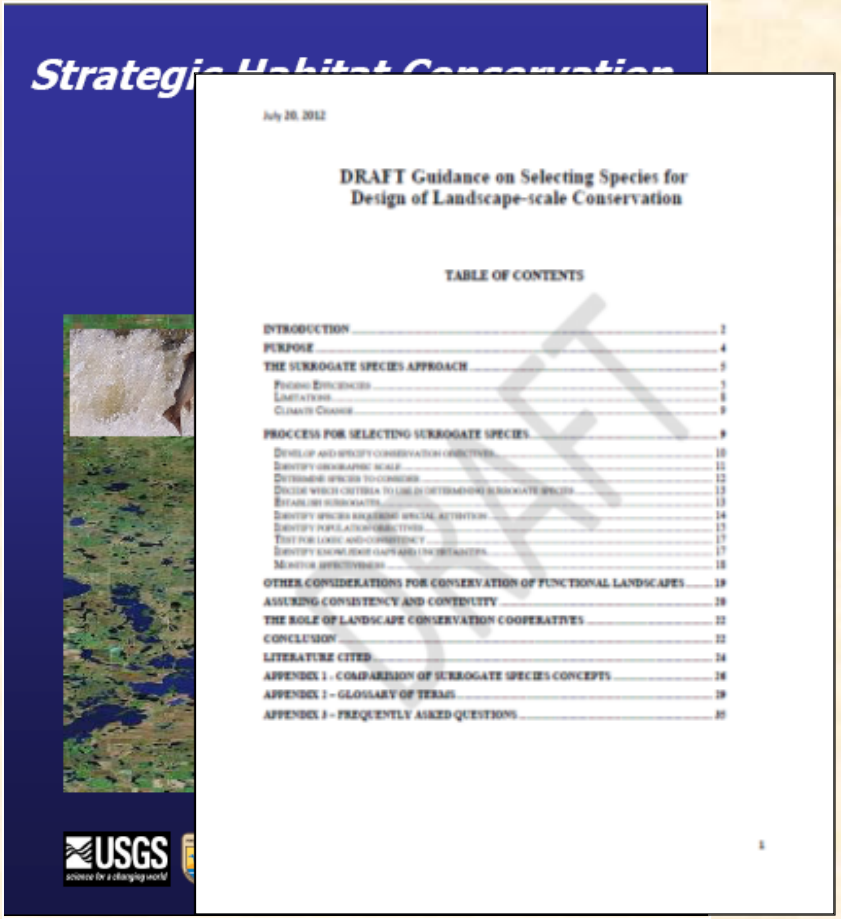

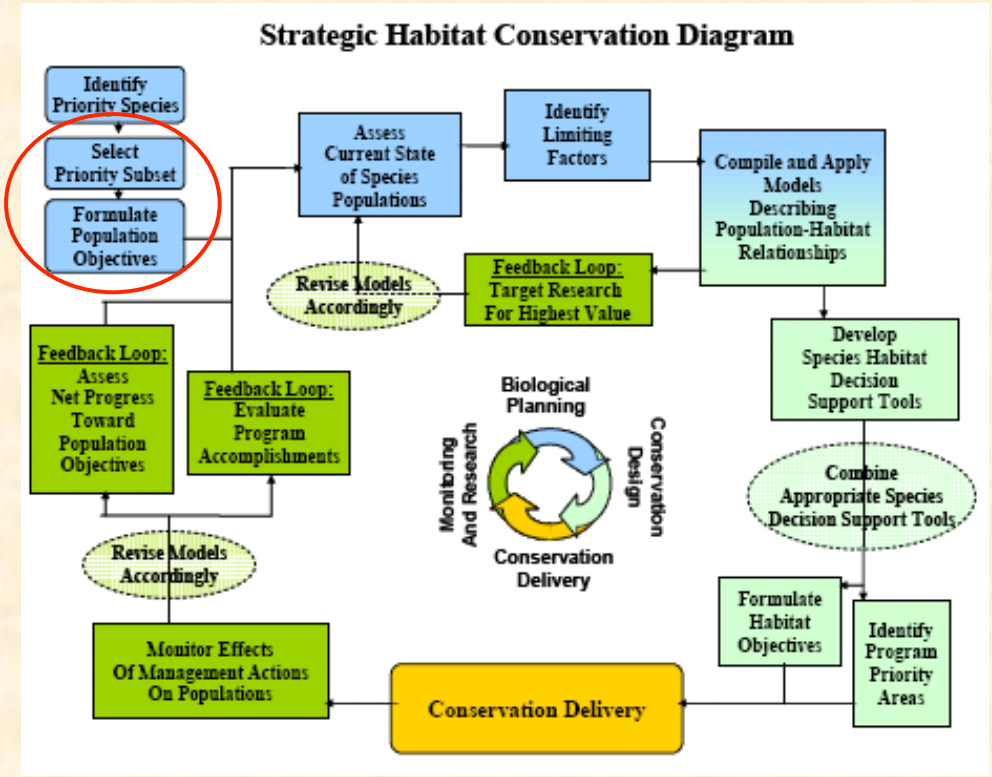

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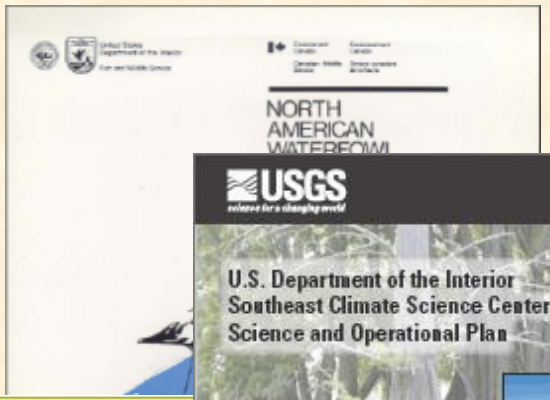
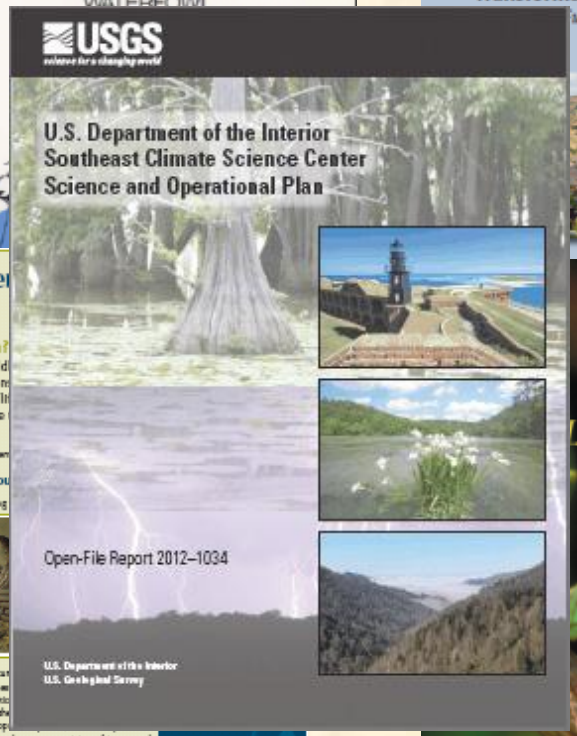




Collaboratively Defining a Future Conservation Landscape in the Southeastern US

1. Explicit Objectives and Measures of Success (Conservation Targets)
   - Species, habitats, ecological processes

Performance and Accountability of Investments

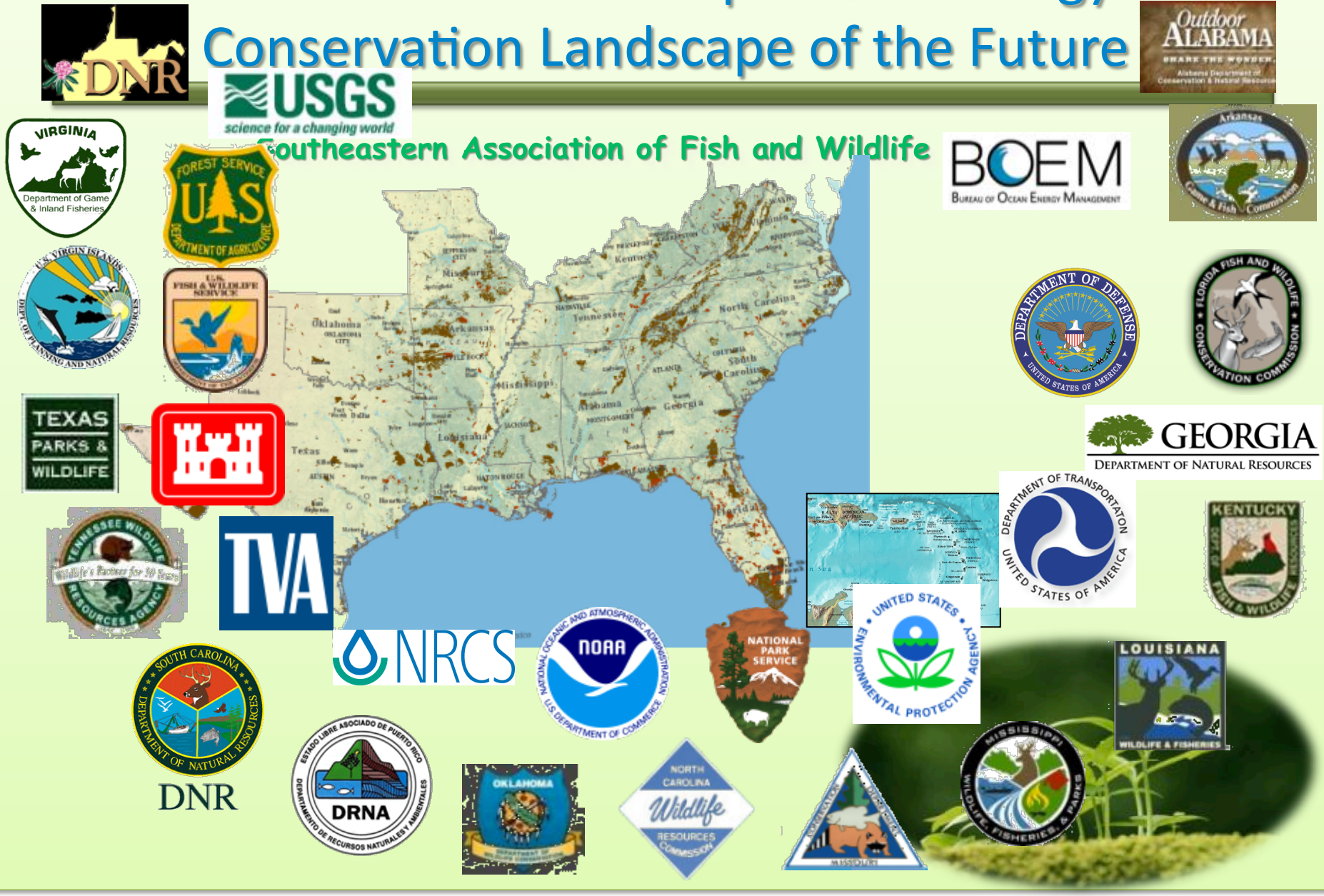
BIOLOGICAL OUTCOMES

How Much, How Much More, and Where?

Responding to The Challenges

SE Conservation Adaptation Strategy

Conservation Landscape of the Future



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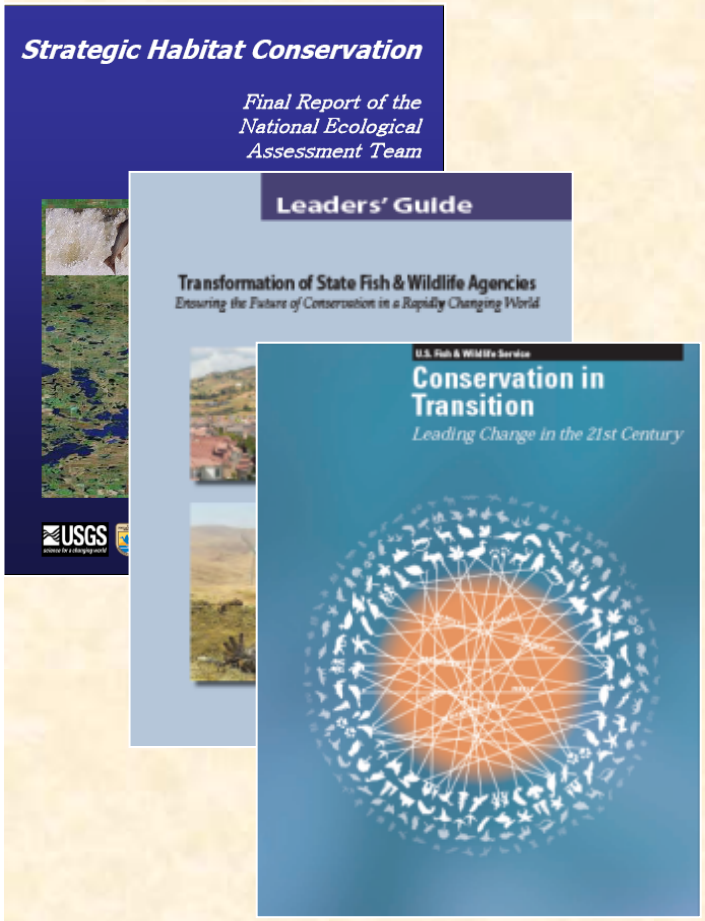

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